



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
09.02.2005 Bulletin 2005/06

(51) Int Cl.7: **C07K 14/705**, C07K 16/28,
C07K 9/00, C12N 5/10,
C12N 15/12, C12P 21/08,
A01K 67/027, A61K 38/17,
A61K 39/395

(43) Date of publication A2:
02.02.2005 Bulletin 2005/05

(21) Application number: **04022364.6**

(22) Date of filing: **27.02.1998**

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

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(30) Priority: **27.02.1997 JP 6229097**
26.02.1998 JP 6221798

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(62) Document number(s) of the earlier application(s) in
accordance with Art. 76 EPC:
98905708.8 / 0 984 023

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(54) **Cell surface molecule mediating cell adhesion and signal transmission**

(57) Novel cell surface molecules recognized by monoclonal antibodies against a cell surface molecule of lymphocytic cells that play an important role in autoimmune diseases and allergic diseases have been isolated, identified, and analyzed for their functions. The cell surface molecules are expressed specifically in thy-

mocytes, lymphocytes activated by ConA-stimulation, and peripheral blood lymphocytes, and induce cell adhesion. Antibodies against the cell surface molecules significantly ameliorate pathological conditions of autoimmune diseases and allergic diseases.



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EUROPEAN SEARCH REPORT

Application Number
EP 04 02 2364

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	REDOGLIA V ET AL: "Characterization of H4: a mouse T lymphocyte activation molecule functionally associated with the CD3/Tcell receptor" EUR J IMMUNOL, vol. 26, 1996, pages 2781-2789, XP001013533 * abstract * * page 2783, right-hand column, paragraph 1 *	1-25	C07K14/705 C07K16/28 C07K9/00 C12N5/10 C12N15/12 C12P21/08 A01K67/027 A61K38/17 A61K39/395
E	WO 99/15553 A (KROCZEK RICHARD ;BUNDESREPUBLIK DEUTSCHLAND LET (DE)) 1 April 1999 (1999-04-01) * the whole document *	8-12,21, 22	
A	SHARPE AH: "Analysis of lymphocyte costimulation in vivo using transgenic and 'knockout' mice" CURR OPIN IMMUNOL, vol. 7, no. 3, 1995, pages 389-395, XP001021014 * abstract * * page 391, left-hand column, paragraph 2 - page 393, left-hand column, paragraph 3 * ----- -/--	13-17, 24,25	TECHNICAL FIELDS SEARCHED (Int.Cl.7) C07K
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 13 December 2004	Examiner Sommer, B
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03/02 (P04001)



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Application Number
EP 04 02 2364

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	KUCHROO V ET AL: "B7-1 and B7-2 costimulatory molecules activate differentially the Th1/Th2 developmental pathways: application to autoimmune disease therapy" CELL, vol. 80, 10 March 1995 (1995-03-10), pages 707-718, XP002166452 * abstract * * page 714, left-hand column, paragraph 2 - page 715, right-hand column, paragraph 1 *	13-17, 24,25	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
T	----- TEZUKA K ET AL: "Identification and characterization of rat AILIM/ICOS, a novel T-cell costimulatory molecule, related to the CD28/CTLA4 family" BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS, SAN DIEGO, ISSN: 0006-291X., vol. 276, no. 1, 16 September 2000 (2000-09-16), pages 335-345, XP000999375 * the whole document *	1-25	
T	----- BUONFIGLIO D ET AL: "The T cell activation molecule H4 and the CD28-like molecule ICOS are identical" EUROPEAN JOURNAL OF IMMUNOLOGY, WEINHEIM, DE, vol. 30, no. 12, December 2000 (2000-12), pages 3463-3467, XP001037423 ISSN: 0014-2980 ----- -/-	1-25	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 13 December 2004	Examiner Sommer, B
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03/82 (P04C01)



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Application Number
EP 04 02 2364

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
T	"Affinity purified anti-mouse/human/rat ICOS mAb, clone C398.4A" XP002310400 Retrieved from the Internet: URL: http://www.ebioscience.com/ebioscience/specs/antibody_14/14-9949.htm [retrieved on 2004-04-29] * the whole document *	1-25	
T	TAMATANI T ET AL: "AILIM/ICOS: a novel lymphocyte adhesion molecule" INTERNATIONAL IMMUNOLOGY, ISSN: 0953-8178., vol. 12, no. 1, January 2000 (2000-01), pages 51-55, XP001007236 * the whole document *	1-17, 19-27	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 13 December 2004	Examiner Sommer, B
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EPO FORM 1503 03.82 (P/4C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 02 2364

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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13-12-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9915553 A	01-04-1999	DE 19821060 A1	15-04-1999
		AU 752433 B2	19-09-2002
		AU 1332099 A	12-04-1999
		CA 2305350 A1	01-04-1999
		WO 9915553 A2	01-04-1999
		EP 1017723 A2	12-07-2000
		JP 2001517425 T	09-10-2001
		US 2002182667 A1	05-12-2002
		US 2002177191 A1	28-11-2002

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